

REMARKS

Claims 1-8 are all the claims pending in the application.

Reconsideration and review on the merits are respectfully requested.

Preliminary Items

Applicants appreciate that on the Office Action Summary sheet, the Examiner acknowledged Applicants' claim for foreign priority and receipt of certified copies of the priority documents.

Applicants also appreciate that the Examiner has returned a signed and initialed copy of the Form PTO/SB/08 A & B (modified) submitted on February 11, 2002.

However, Applicants kindly request that the Examiner acknowledge and return a signed and initialed copy of the Form PTO/SB/08 A & B (modified) submitted on December 13, 2002.

Election/Restrictions

The Examiner acknowledges Applicants' election of Species I (claims 1-3).

Drawings

The Examiner states that Figure 5 should be designated by a legend such as --Prior Art-- because allegedly only that which is old is illustrated.

A formal drawing is submitted concurrently herewith labeling Figure 5 as Prior Art.

Claim Rejections - 35 U.S.C. § 102

Claims 1-3 are rejected under 35 U.S.C. § 102(b) as assertedly being anticipated by Pramanick et al (6,165,894) for the reasons given in the Office Action.

Applicants respectfully traverse the rejection. Pramanick does not anticipate Applicants' claimed invention.

Pramanick does not disclose, and thereby does not anticipate, each of the elements claimed in claim 1. For example, and not by way of limitation, Pramanick does not disclose the step of “applying a nitride treatment to the surface of said copper-containing film from which the copper oxide has been removed”. The Examiner appears to be mistakenly applying the NH₃ containing plasma of Pramanick as anticipating this claimed step of applying a nitride treatment. However, Applicants’ clearly claim the step of applying a nitride treatment to the surface of the copper containing film from which the copper oxide has *already been removed*, whereas Pramanick’s NH₃ treatment is used for the specific purpose of substantially reducing or removing a *still existing* copper oxide film. (See Pramanick, col. 5, lines 23-33).

The use of NH₃ plasma was clearly identified by Applicants in the Background of the Invention, for example at the bridging paragraph of pages 2-3, as creating certain problems. Applicants clearly indicated, for example, at pages 3-4, that conventional methods such as a reducing plasma treatment creates certain problems such as a decrease in interconnection lifetime and non-uniform film thickness of the copper-diffusion prevention film. Whereas in the present invention, since the nitriding treatment is applied to a clean copper surface where no copper oxide film remains, the film thickness and the film quality of a CuN film can be made uniform along with the film thickness of a copper silicide layer to be formed in the copper interconnection. As a result, the increase in electrical resistance which may be brought about by oxidation of the copper-containing film surface can be suppressed. And also, the interconnection lifetime can be lengthened. (See pages 7-8).

RESPONSE UNDER 37 C.F.R. § 1.111
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For the reasons given above, Applicants kindly submit that Pramanick fails to anticipate the claimed invention, and accordingly request reconsideration and withdrawal of the rejection and allowance of Claims 1-3.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

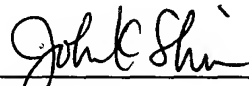
Respectfully submitted,

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